

REMARKS

Status of the Claims

Claims 18-22 are currently pending in this application. No claim amendments have been presented herein.

Rejection of claims 18-22 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,115,884 to Walt et al. in view of U.S. Patent No. 6,013,531 to Wang and further in view of U.S. Patent No. 5,602,042 to Farber

The Examiner has rejected claims 18-22 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,115,884 to Walt *et al.* (hereinafter “Walt”) in view of U.S. Patent No. 6,013,531 to Wang (hereinafter “Wang”) and further in view of U.S. Patent No. 5,602,042 to Farber (hereinafter “Farber”). Applicants hereby traverse this rejection.

The Examiner argues that Walt teaches a method of multiplex analysis of analytes in solution, comprising providing subpopulations of microspheres with distinct optical response signatures or different associated fluorescent dyes with capture moieties thereon, assembling the microspheres into an array and adding a sample, illuminating the array, and decoding the array by comparison to a known analyte or a library of optical response signatures for its corresponding microsphere subpopulation type. The Examiner argues that it would have been obvious to modify the method of Walt by using fluorescent magnetic beads as markers in assays, as taught by Wang. The Examiner further argues that it would have been obvious to modify the method of Walt and Wang by applying a magnetic field to the beads to form an assembly, as taught by Farber.

Applicants respectfully submit that Farber does not teach the magnetic assembly step recited by claim 18. Specifically, Farber does not teach or suggest the particular magnetic field characteristics recited in the claims.

First, with regard to the recitation in claim 18 of a “uniformly distributed field,” Farber does not teach such a uniformly distributed field. The Examiner asserts that, “Farber teaches that the particles are uniformly collected against the substrate surface and therefore, the magnetic

field must be uniformly distributed across the substrate in order to uniformly collect the magnetic particles” (see Official Action, page 7). The only reference to “uniform” distribution of a magnetic field in Farber relates to one particular embodiment of the method described therein, in which a magnet is fixed at one point on the periphery of a rotating disc disposed vertically above the plate. Farber notes that this configuration “achieves a more uniform spatial distribution of the particles collected against the surface” (emphasis added; see column 4, lines 3-9). Initially, Applicants note that “more uniform” is not analogous to “uniform” as recited in the present claims.

Further, Farber states, with regard to this configuration (for achieving more uniform spatial distribution) that the rotating disk is a means for “spatially varying the magnetic field.” (see column 4, lines 5-7). Thus, although Farber refers to a “more uniform” distribution of particles, this distribution is not achieved with a “uniform” magnetic field; rather, it is specifically described as being achieved by “spatially varying” the magnetic field. As such, Applicants respectfully submit that the Examiner’s conclusion that because Farber teaches that particles are “uniformly” collected against the surface, the magnetic field “must be uniformly distributed” is in error. The claims pending in the present application recite a uniform magnetic field, which is not taught or suggested by the cited references. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

Second, with regard to the recitation in claim 18 that spacing between particles may be varied by varying the strength of the magnetic field, Farber does not teach such a result. The Examiner alleges that Farber teaches the selective activation/deactivation of a distributed array of magnets, and that the magnetic field of the individual magnets/coils is varied and can therefore adjust the inter-particle spacing. The arrangement of posts extending from a magnet to a plate collection surface to vary the strength of the field across the collection surface taught by Farber (see column 7, lines 26-30) is not taught to be capable of achieving this goal. The reference to a distributed array of magnets that can be selectively activated and deactivated to spatially vary the magnetic field is not analogous to the recited “spacing between particles” within the same array that can be “varied by varying the strength of the magnetic field” in the presently pending claims.

Farber teaches that each post of the distributed array of magnets can be selectively activatable, giving an array of magnetic elements such that the strength of the magnetic field is varied over the area of the surface. The discussion of the magnetic field throughout Farber relates to a spatially varying magnetic field (see, e.g., column 7 line 46). The posts may be selectively activated/deactivated to modify the spatial variance of the magnetic field. There is no teaching or suggestion that this spatial variance results in a change in intra-particle spacing.

Furthermore, in clear contrast to the teachings of Farber, the presently claimed method requires a uniform magnetic field, wherein varying the strength of the uniform magnetic field allows the spacing between particles within the array to be varied. For example, the present invention provides for specific control over the spacing of particles as a function of magnetic field strength. The present specification notes that a particularly useful structure for generating a uniform distribution is a pair of electromagnetic coils with opposing individual field directions. By adjusting the gap between the coils or the relative position of the coils and by varying the individual currents in the coils, the force on the microparticles can be controlled (see, for example, paragraph [0101]). As a consequence of this uniform distribution, the magnetic field strength may simply be increased to develop ordered planar assemblies of field-dependent number density (or average inter-particle distance) (see, for example, paragraph [0102]). As previously noted, Farber does not teach a uniform magnetic field, and similarly does not teach varying the strength of a uniform magnetic field to adjust particle spacing. There is nothing in Farber to teach or suggest a method of varying the spacing between particles by varying the strength of a uniform magnetic field. Applicants therefore respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

Applicants respectfully submit that the present application is in condition for allowance and request early notification of the same. Should the Examiner believe the prosecution of the application can be facilitated by a discussion of the issues presented, the Examiner is invited to contact Applicant's representative at the number below.

Applicants believe no fees are due other than those provided elsewhere in this response. However, if additional fees are due, the Commissioner is hereby authorized to charge any required fees or credit any overpayment to Deposit Account No. 09-0528 under order number B252 01280US.

Dated: December 8, 2010

Respectfully submitted,

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